CLAIMS

1. An engine device comprising:

a wheel supported for rotation in a working direction about a generally horizontal wheel axis, defining a rising side and a falling side of the wheel as the wheel rotates;

a plurality of pockets at spaced positions about a periphery of the wheel;

a tank surrounding the wheel for containing a fluid about the wheel;

means to introduce gas into the pockets on the rising side of the wheel;

means to remove gas from the pockets on the falling side of the wheel;

and a power take-off shaft coupled to the wheel for rotation with the wheel about the wheel axis;

whereby buoyancy of gas in the pockets on the rising side of the wheel causes rotation of the wheel in the working direction to produce usable power at the power take-off shaft.

2. The engine device according to Claim 1 wherein the pockets are spaced radially outward from the shaft.

3. The engine device according to Claim 1 wherein each pocket tapers radially inwardly towards a leading side thereof.

4. The engine device according to Claim 1 wherein the pockets are collapsible.

5. The engine device according to Claim 1 wherein each pocket comprises a stiff outer panel coupled to the periphery of the wheel by flexible side members permitting the stiff outer panel to be displaced between an expanded position of the pocket in which the panel is spaced from the periphery of the wheel and a collapsed position of the pocket in which the panel is directly

adjacent the periphery of the wheel.

6. The engine device according to Claim 1 wherein the shaft is arranged to extend through a wall of the tank and wherein there is provided a sealing member connected between the wall and the shaft.

7. The engine device according to Claim 1 wherein the tank has an outer wall which is generally cylindrical about the wheel axis, spaced outwardly from the periphery of the wheel.

8. The engine device according to Claim 1 wherein the tank is supported for rotation about the wheel axis.

9. The engine device according to Claim 1 wherein the means to introduce gas into the pockets comprises a source of gas under pressure which selectively communicates with each of the pockets.

10. The engine device according to Claim 9 wherein there is provided a solenoid valve communicating between each pocket and the source of gas under pressure.

11. The engine device according to Claim 9 wherein the wheel includes a plurality of radially extending tubes communicating between the pockets and the source of gas under pressure at a centre of the wheel.

12. The engine device according to Claim 11 wherein the source of gas under pressure communicates through a shaft of the wheel.

13. The engine device according to Claim 1 wherein the pockets are sealed with respect to fluid in the surrounding tank and wherein the means to introduce gas into the pockets and the means to remove gas from the pockets each comprise tubes communicating gas externally from the wheel.

14. The engine device according to Claim 13 wherein the means to remove gas from the pockets comprises a source of vacuum pressure which selectively communicates with the pockets.

15. The engine device according to Claim 14 wherein there is

provided a solenoid valve communicating between each pocket and the source of vacuum pressure.

16. The engine device according to Claim 13 wherein the means to introduce gas into the pockets includes an inlet bore at one end of the shaft of the wheel communicating with the pockets via selected ones of the tubes and wherein the means to remove gas from the pockets includes an outlet bore at an opposing end of the shaft of the wheel communicating with the pockets via selected other ones of the tubes.

17. The engine device according to Claim 1 wherein the means to remove gas from the pockets comprises an outlet vent in each pocket located at a trailing end thereof.

18. The engine device according to Claim 17 wherein there is provided a gas collector at a top end of the tank for collecting gas released by the pockets into the fluid contained in the tank.

19. The engine device according to Claim 17 wherein the tank is fixed relative to the ground and the wheel is rotatable within the tank.